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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,592	08/05/2003	Ralf Birkelbach	000137.00026	4811

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EXAMINER

SHARP, JEFFREY ANDREW

ART UNIT	PAPER NUMBER
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3677

DATE MAILED: 05/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/633,592

Applicant(s)

BIRKELBACH ET AL.

Examiner

Jeffrey Sharp

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-6 and 8-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-6 and 8-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is responsive to Applicant's remarks/amendment filed 16 March 2005 with regard to the Official Office action mailed on 16 December 2004.

Status of Claims

[1] Claims 2-6, and 8-15 are pending and stand rejected.

Claims 1 and 7 have been cancelled.

Drawings

[2] The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations of claims 4, 5, and 12 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet"

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pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

[3] Claim 6 is objected to because of the following informalities: There is insufficient antecedent basis for the limitations "first and second cross-sections". Appropriate correction is required.

Response to Arguments/Remarks

[4] The claims have been amended such that they now depend from claim 15, and such that there are new issues at hand regarding the thread structure. Consequently, all previous rejections and arguments have been fully considered, but are now moot in view of the following new grounds of rejection.

New Grounds of Rejection

Claim Rejections - 35 USC § 102

[5] The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this

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subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

[6] Claims 2, 3, 6, 11, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Carlson et al. US-3,794,092 (Refer to Figure 9).

Carlson et al. teach a substantially cylindrical rear area, and tapered frontal area, having reversed oblique thread bisectors that angle away from the head in the rear area, and angle toward the head in the frontal area. The threads have asymmetrical threads with respect to the longitudinal axis. The front and rear areas act as means for thread forming and locking, respectively, in the same way as disclosed by Applicant on Page 3 lines 4-7 of the instant specification¹. Further, Carlson et al. anticipate any type of thread structure that would accomplish the same task².

As to Applicant's assertion that the threads of Carlson et al. are not characterized in that the threads have straight rear and load flanks from a tip to a core", Carlson et al. show straight "generally triangular cross-sectioned" threads. See also, US-3,504,722 to Breed, which is cited by the Carlson et al. '092 patent and supports a similar fastener having straight flanks for self-tapping threads on a member, which run all the way out from tip to core.³

As for claim 2, the figures depict what appear to be roughly 82-degree bisector angles with respect to the screw axis.

As for claim 3, Carlson et al. Figure 9 shows a reversal point at the transition point between front (tapered) and rear (substantially cylindrical) areas.

As for claim 6, the first cross-section appears from the drawings to run in mirror-image

¹ Col 13 lines 13-40.

² Col 4 lines 3-6 and lines 12-14.

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fashion with the second cross-section.

As for claim 11, the figures depict what appear to be roughly 45-degree flank angles.

Claim Rejections - 35 USC § 103

[7] The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

[8] Claims 2, 3, 6, and 8-11 are rejected/further rejected under 35 U.S.C. 103(a) as being unpatentable over Carlson et al. US-3,794,092 as discussed above in view of Birkelbach DE 19960287.

Carlson et al. generally teach all of the limitations of the instant claim 1, including what appear to be 82-degree bisector angles and 45-degree flank angles from the drawings. Further, Carlson et al. state that any thread known in the art may be employed.⁴

However, Carlson et al. fail to disclose *expressly*, an 82-degree bisector angle, 45-degree flank angle, or 70-degree flank angle.

Birkelbach teaches an improved thread profile comprising an 82-degree bisector angle, 45-degree flank angle, or 70-degree flank angle.

At the time of invention, it would have been obvious to one of ordinary skill in the art, to modify the front and rear areas taught by Carlson et al., to comprise the 82-degree bisector

³ Col 1 line 30.

⁴ Col 4 lines 3-6 and lines 12-14.

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angle, 45-degree flank angle, and/or 70-degree flank angle taught by Birkelbach, in order to achieve the improved holding and locking function and associated advantages suggested by Birkelbach's thread profile.

As supporting evidence that the threads of Birkelbach can be reversed as taught by Carlson et al., Roberts et al. US-6,185,896 teaches the inverted thread profile for the same insertion and thread-forming purpose for use with sheet panel material (See Roberts et al. Figures 6 and 7).

As for claim 3, Carlson et al. suggest a reversal point located at the transition area.(B).

As for claim 6, Carlson et al. suggest a mirrored thread profile (in Figure 9).

As for claim 8, the thread profile taught by Birkelbach has a bend (at 12), giving a greater flank angle towards the core than at the tip.

As for claim 9, the bend taught by Birkelbach is located within an obvious scope of 20-15% of the height.

[9] Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carlson et al. US-3,794,092.

Carlson et al. substantially disclose all limitations found in the instant claim 15, as discussed above; however, fail to disclose expressly a reversal point outside of the transition zone (i.e., in the front or rear area).

At the time of invention, it would have been obvious to one having an ordinary skill in the art, to move the reversal point taught by Carlson et al. to any one of the rear and front areas, since it has been held that rearranging parts of an invention involves only routine skill in the art.

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In re Japikse, 86 USPQ 70. See also, *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (the particular placement of a contact in a conductivity measuring device was held to be an obvious matter of design choice). In the instant case, Carlson et al. discloses a broader "transition" area (B) than Applicant. For example, Carlson et al. Figure 7 shows a transition having little to no axial range similar to Applicant's Figure 1 -- there exists mainly a front and rear area. However, the figure of importance (i.e., Carlson et al. Figure 9) suggests a broader transition area of some greater axial range, which is open to question as to where the reversal point actually falls. Accordingly, merely moving the reversal point to one of the front and rear area would not be within an "unobvious" scope, given Carlson et al.'s disclosure, because Carlson et al. allows a larger axial "play" in the location of the reversal.

[10] Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carlson et al. US-3,794,092 as discussed above in view of Breed US-3,504,722.

Carlson et al. substantially teach all of the limitations of the instant claim 15, but fail to disclose expressly: 1) straight flanks for self-tapping, which run all the way out from tip to core and form a point, and 2) a 90-degree flat in the reversal point area (i.e., transition zone B).

Breed suggests a similar fastener for self-tapping⁵ having straight thread flanks (42), which run all the way out from tip to core and form a point (48). Further, Breed clearly illustrates "generally triangular cross-sectioned" threads, and shows a 90-degree flat (38) at the reversal point area (between 12 and 18).

⁵ Col 1 line 30.

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At the time of invention, it would have been obvious to one having ordinary skill in the art, to modify the thread taught by Carlson et al. by having straight flanks that run out to a tip, as Carlson et al. expresses that any known thread in the art will suffice as an art-recognized equivalent. Further, it would be obvious to employ a 90-degree flat as suggested by Breed, as known in the self-tapping art, in order to make room for the removal of chips and material displaced from the object threaded by the screw.

[11] Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carlson et al. US-3,794,092 as discussed above in view of Moskovitz US-3,133,578.

Carlson et al. substantially disclose all limitations found in the instant claim 15, as discussed above; however, fail to disclose expressly the frontal threads having a greater flank angle than the threads in the rear area.

Moskovitz suggests a screw similar to the one taught by Carlson et al., the screw having a front and rear area, wherein the frontal threads have a greater flank angle than the threads in the rear area.

At the time of invention, it would have been obvious to one having ordinary skill in the art, to modify the thread profile taught by Carlson et al., so that the front threads have a flank angle greater than the ones in the rear area as suggested by Moskovitz, in order to provide a secondary locking operation to the fastener. Generally speaking, the front area cuts undersized female threads in an object, and then the wider rear area threads "stretch" said female threads out. This enables a self-locking feature, which is desirable in high vibration environments.

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Conclusion

[12] Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

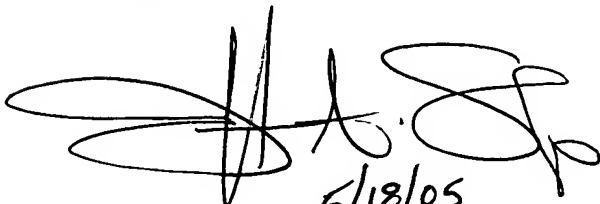
[13] Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Sharp whose telephone number is (571) 272-7074. The examiner can normally be reached 7:00 am - 5:30 pm Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, J.J. Swann can be reached on (571) 272-7075. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JAS



5/18/05



ROBERT J. SANDY
PRIMARY EXAMINER